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(54) FREQUENCY-DEPENDENT PROCESSING AND INTERPRETATION (FDPI) OF SEISMIC DATA FOR IDENTIFYING, IMAGING AND MONITORING FLUID-SATURATED UNDERGROUND RESERVOIRS

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(57) **ABSTRACT**

A method for identifying, imaging and monitoring dry or fluid-saturated underground reservoirs using seismic waves reflected from target porous or fractured layers is set forth. Seismic imaging the porous or fractured layer occurs by low pass filtering of the windowed reflections from the target porous or fractured layers leaving frequencies below low-most corner (or full width at half maximum) of a recorded frequency spectra. Additionally, the ratio of image amplitudes is shown to be approximately proportional to reservoir permeability, viscosity of fluid, and the fluid saturation of the porous or fractured layers.